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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,815	03/21/2007	Paul Martyn Williams	6608-000008/US/NP	8548
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HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			EXAMINER TIEFEN, MARINA ANNETTE	
			ART UNIT 3753	PAPER NUMBER
			MAIL DATE 11/07/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/578,815

Applicant(s)

WILLIAMS ET AL.

Examiner

MARINA TIETJEN

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2007.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 04 May 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-85/86)
Paper No(s)/Mail Date 05/04/2008
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because different reference characters have been used throughout the drawings to designate the same element. For example, reference characters "11" and "22" have both been used to designate a valve seat (11 in Fig. 4 and 22 in Fig. 5). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because a single reference character has been used to designate different elements throughout the drawings. For example, "8" has been used to designate both an outlet port (Fig. 2) and a releasable clamp (Fig. 9). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the

figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

3. Claim 16 is objected to because of the following informalities: Claim 16 is dependent on Claim 16. Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 11-14, 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. Regarding Claim 11, it is unclear from the limitation "including a pair of wings which extend laterally outwards from opposite sides of the valve body in the region of the valve seat" whether the wings extend lateral in relation to the direction of flow through the valve body or lateral in relation to the valve seat of the valve body.

7. Regarding Claim 12, it is unclear from the limitation "so as to have a maximum width in the region of the valve seat" what has a maximum width. The valve body, valve seat, wings?

8. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance:

- a. Claim 13 recites the broad recitation "sealingly welded", and the claim also recites "in particular by welding" which is the narrower statement of the range/limitation.
- b. Claim 14 recites the broad recitation "formed of a different material or different grade of material", and the claim also recites "in particular a different polymer or different grade of polymer" which is the narrower statement of the range/limitation.

c. Claim 18 recites the broad recitation "a coupling means", and the claim also recites "in particular a cup" which is the narrower statement of the range/limitation. Claim 18 also recites the broad recitation "is formed" followed by the narrower statement "in particular integrally formed", the broad limitation "couplingly engages" followed by the narrow statement "in particular a snap fit", and the broad limitation "complementary coupling means" followed by the narrower statement "in particular a button".

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Boteler (3488824).

Regarding Claim 1, Boteler discloses a diaphragm valve (Fig. 7) comprising: a valve body 14 (Fig. 1); a diaphragm 24 (Fig. 1) which is sealed to the valve body 14 to define a flow passage which extends between an inlet port (Fig. 1) and an outlet port (Fig. 1), both defined by the valve body 14; and an operating mechanism 10 (Fig. 1) secured to the valve body 14 for moving the diaphragm 24 into sealing engagement with a valve seat 27 (Fig. 7) provided on the valve body 14 in order to close the flow passage to fluid flow, characterized in that the valve body 14 and diaphragm 24 are

integrally formed as a disposable assembly having a relatively less flexible region 14 with a weir 27 extending across the passage which forms the valve seat and a relatively more flexible region 24 which forms the diaphragm which may be forced into engagement with the valve seat 27 to close the flow passage to fluid flow, and a housing 44 is provided for mechanically supporting the region of the valve body 14 in which the seat area is defined.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-9, 17, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Summerfield (4044990) in view of Butler (6241213).

Regarding Claim 1, Summerfield discloses a diaphragm valve (Fig. 11) comprising:

a valve body 200 (Fig. 5);

a diaphragm 180 (Fig. 5) which is sealed to the valve body 200 to define a flow passage (Fig. 5) which extends between an inlet port (Fig. 5) and an outlet port (Fig. 5), both defined by the valve body 200;

and an operating mechanism 30 (Fig. 9) secured to the valve body 200 for moving the diaphragm 180 into sealing engagement with a valve seat (inner surface of

body 200, Fig. 12) provided on the valve body 200 in order to close the flow passage (Fig. 9) to fluid flow, characterized in that the valve body 200 and diaphragm 180 are integrally formed as a disposable assembly having a relatively less flexible region and a relatively more flexible region 16 (Fig. 2) which forms the diaphragm 180 which may be forced into engagement with the valve seat to close the flow passage to fluid flow, and a housing 260, 280 (Figs. 9, 11) is provided for mechanically supporting the region of the valve body 200 in which the seat area is defined. However, Summerfield fails to disclose a weir extending across the passage which forms the valve seat.

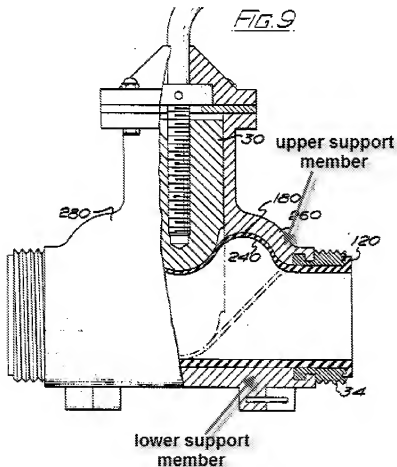
Butler teaches a weir extending across a flow passage is conventional and known in the art for providing a valve seat in a diaphragm valve (col. 1, lines 9-11).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Summerfield's invention to include a weir extending across a flow passage as is conventional and known in the art, as taught by Butler, for the purpose of providing a valve seat.

Regarding Claims 2, Summerfield discloses said housing 260, 280 has a longitudinal through opening formed therein in which at least the region of the valve body 200 in which the seat area (inner surface of 200) is defined is mounted so as to support said region.

Regarding Claim 3, Summerfield discloses said housing 260, 280 includes an aperture in the region of the diaphragm 180 in which said operating mechanism 30 engages.

Regarding Claim 4, Summerfield discloses said housing 260, 280 is formed by an upper support member (see labeled Fig. 9 below) having a lower surface which engages an upper surface of said region of the valve body 200, and a lower support member (see labeled Fig. 9 below) having an upper surface which engages a lower surface of said region of the valve body 200, said upper and lower surfaces of said support members being of complementary shape to the respective upper and lower surfaces of the said region.



Regarding Claim 5, Summerfield discloses said support members define between each other a through opening through which said valve body extends (Fig. 9).

Regarding Claim 6, Summerfield discloses the region of the valve body 200 in which the seating area is defined has an upper wall and a lower wall, the upper wall being flexible and forming the diaphragm 180, and the lower surface 200 being rigid and its inner surface forming the valve seat (Fig. 9).

Regarding Claim 7, Summerfield discloses said upper wall 180 is thinner than said lower wall 200 so as to be more flexible.

Regarding Claim 8, Summerfield discloses said upper wall 180 is of a different shape (Fig. 5) to said lower wall such that said upper wall 180 is more flexible than said lower wall 200.

Regarding Claim 9, Summerfield discloses said lower wall includes reinforcing mean (extra material) which increases its stiffness.

Regarding Claim 11, Summerfield discloses a pair of wings 240 (Fig. 5) which extend laterally outwards from opposite sides of the valve body 200 in the region of the valve seat.

Regarding Claim 12, Summerfield discloses said wings 240 (Fig. 5) extend longitudinally along the valve body 200 and taper laterally towards said valve body 200 towards each end thereof so as to have a maximum width in the region of the valve seat (plunger area between wings 240 being wider than each wing, better seen in Fig. 9).

Regarding Claim 13, Summerfield discloses the invention as essentially claimed, except for the diaphragm 180 is formed separately to and is sealingly welded to valve body 200. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the diaphragm and valve body separately and then

welded together, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179.

Regarding Claim 17, Summerfield discloses said operating means 30 is mechanically coupled to said diaphragm 180 such that upon movement of the operating means 30 towards the valve seat, the diaphragm 180 is pressed by the operating means 30 against said valve seat (Fig. 9) and upon movement of the operating means 30 away from the valve seat.

Regarding Claim 18, Summerfield discloses a coupling means 1240 (Fig. 14) is formed on said diaphragm, which coupling engages with complementary coupling means 1220 (Fig. 14) carried on the operating means.

Regarding Claim 20, Summerfield discloses the valve body 200 is profiled to include a flat invert surface 10 (Fig. 2) extending through the body from the inlet port to the outlet port such that the valve body is self draining (col. 5, lines 22-30).

3. Claims 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Summerfield (4044990) in view of Rebouillat (6358451).

Regarding Claim 10, Summerfield discloses the invention as essentially claimed, except for said upper wall (diaphragm) is formed of a more flexible different material than said lower wall and the valve seat.

Rebouillat teaches it is known in the art to use PPD-T fibers to reinforce rubber materials for the purpose of providing a durable rubber composition (col. 4, lines 42-63).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the lower wall (thicker region) 200 of a fiber reinforced material and the upper wall of unreinforced rubber material, as suggested by Rebouillat, for the purpose of providing a durable valve body and seat, yet still having a very flexible diaphragm or upper wall.

4. Claims 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Summerfield (4044990) in view of Alder (2898088).

Regarding Claims 15-16, Summerfield discloses the invention as essentially claimed, except for said housing includes marking means which permanently mark and damage the valve body upon mounting of the valve body therein so as to identify the valve body as having been used.

Alder teaches a housing 75 (Fig. 2a) including marking means (protrusions which pinch against pinching ring 67, Fig. 4) which permanently mark the valve body 65 upon mounting of the valve body 65 therein for the purpose of securely mounting the valve body 65 in said housing 75.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Summerfield's invention such that the housing includes marking means which permanently mark and damage the valve body upon mounting of the valve body therein, as taught by Alder, for the purpose of securely mounting the valve body in said housing.

5. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Summerfield (4044990) in view of Danko (4915353).

Regarding Claim 19, Summerfield discloses the invention as essentially claimed, except for said diaphragm is coupled to the operating means in such a manner that the coupling means formed on the diaphragm is damaged upon uncoupling the diaphragm from the operating means.

Danko teaches a diaphragm 50 coupled to an operating means 36 by coupling means such as spot welding (col. 2, lines 63-67) for the purpose of ensuring the diaphragm move in the direction of the operating means. Uncoupling the diaphragm would damage the weld coupling means.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Summerfield's invention such that the diaphragm is coupled to the operating means by coupling means such as spot welding for the purpose of ensuring the diaphragm move in the direction of the operating means. Uncoupling the diaphragm would damage the weld coupling means.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MARINA TIETJEN whose telephone number is (571) 270-5422. The examiner can normally be reached on Mon-Thurs, 9:00AM-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, GREG HUSON can be reached on (571) 272-4887. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John Rivell/
Primary Examiner, Art Unit 3753

/M. T./
Examiner, Art Unit 3753